Jordan University of Science and Technology
Faculty of Engineering
Civil Engineering Department

CE916 Operations Research - JNQF Level: 10
Second Semester 2024-2025

Course Catalog
3 Credit Hours. Linear programming, network analysis, decision analysis, random processes, Queuing models, inventory models, simulation, introduction to nonlinear & dynamic programming.
Teaching Method: Electronic Course

Text Book	
Title	Operations Research: Applications and Algorithms
Author(s)	Winston, Wayne L.
Edition	4th Edition
Short Name	Ref # 1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref # 2	Introduction to operations research	Hillier, F. S., & Lieberman, G. J.	9th Edition	

Instructor	
Name	**Prof. WASIM BARHAM**
Office Location	-
Office Hours	
Email	wsbarham@just.edu.jo

Class Schedule & Room

Section 1:
 Lecture Time: Mon : 18:00 - 19:30
 Room: منصة الكترونية متزامن الحضور

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
	Introduction to Operations Research	
	Linear programming (LP) basics; graphical solution method; LP formulations	
	Simplex method for LP	
	Duality; sensitivity analysis; post-optimality analysis	
	Transportation and assignment problems; Network optimization models	
	Network Optimization Models	
	Decision Analysis	
	Queueing Theory	
	Inventory Theory	
	Simulation	
	Dynamic Programming	
	Nonlinear Programming	
	Nonlinear Programming	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Demonstrate the ability to identify and select suitable operations research models for a variety of engineering problems based on problem characteristics and context. [1L10S2]	20%	
Develop valid mathematical and probabilistic models to represent and solve complex engineering problems effectively. [1L10C1]	20%	
Interpret the outcomes of operations research models, providing meaningful insights and conclusions relevant to engineering decision-making. [1L10S3]	20%	
Apply operations research methodologies to real-world engineering scenarios, showcasing problem-solving skills and practical implementation. [1L10C2]	20%	
Utilize foundational knowledge of mathematics, probability, and statistics to develop, and refine operations research models. [1L10K1]	20%	

Relationship to NQF Outcomes (Out of 100%)				
L10K1	L10S2	L10S3	L10C1	L10C2
20	20	20	20	20

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